BOTANICAL GAZETTE.

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A New Eriochloa.

BY VASEY AND SCRIBNER.

ERIOCHLOA LEMMONI. Culms (1½ ft. high) ascending, branching below, and with the sheaths and leaves covered with a fine soft pubescence. Leaves linear-lanceolate, acute, acute spreading, longer than the internodes (⅞ in. long, upper one a little shorter), 4–5 lines wide; ligule a short ciliate ring, sheaths somewhat inflated. Panicle about 4 in. long, composed of about 6 simple sessile branches or spikes, which spread horizontally when in flower, becoming nearly erect. Spikes 1–1¼ in. long, rhachis covered with short spreading hairs. Spikelets 2 lines long, nearly at right angles with the rhachis, on short (½ line) pedicels; outer glumes soft-hairy, equal, ovate-lanceolate, rather obtuse, lower one 5-nerved, upper one 3-nerved; flowering glume oblong, ¼ shorter than the outer glumes, finely striate and wrinkled, tipped with a tuft of short hairs.

This is the *Eriochloa grandiflora*, Vasey, in "Grasses of the United States," p. 11, and in BOTANICAL GAZETTE, vol. IX., p. 96 (without description). It is quite distinct from the South American *E. grandiflora*, Benth. (*Helopus grandiflorus*, Trin. Gram. III, 278), differing in its lower habit, shorter and broader leaves, shorter and more approximate spikes, and in the smaller and less pubescent spikelets. Like that species this has the flowering glume tipped with a tuft of hairs, instead of the short awn common to the other species of the genus, and the second glume has (in the spikelets examined) an imperfectly developed palea.

Arizona (n. 2910 *Lemmon*, 1882), and N. Mexico (n. 2087 *C. Wright* in part, as per specimens in Dr. A. Gray's Herbarium at Cambridge.

EXPLANATION OF PLATE II.—Fig. 1. Habit of plant. 2. Spikelet, showing the lowest glume. 3. Spikelet, showing the second glume. 4. Flowering glume, dorsal view. 5. Anterior view of floret. 6. The second glume with an imperfectly developed palea. (This plate is from Prof. Beal's proposed work on the Grasses of North America.)

Arizona Plants.

BY F. LAMSON SCRIBNER.

Botanists will be glad to learn that Mr. C. G. Pringle has returned safely from Southern Arizona, where he has been spending the past summer, to the "pure air and water of Vermont," and that, in spite of a severe illness, which prematurely closed his field labors, he has brought with him a large collection of plants. Owing to an unusual amount of rain in the Territory, all vegetable growth has been remarkably rich and varied, and he has been enabled to secure many novelties that have never before, or that have but rarely appeared in American collections. In the region explored we might reasonably expect that so acute an observer as Mr. Pringle would discover many new species, but we are truly surprised to learn of the recognition of *four new genera* among his collections from Sonora. Respecting the character of the specimens themselves, the name of their collector is a sufficient assurance of their superior excellence. Some of the grasses which will enter into the present distribution are named below. We may add here, that if the new acquisitions in this order afford any index to the discoveries in other families, the collection is valuable indeed, and the labors of Mr. Pringle surely deserve the thanks and hearty support of all botanists interested in acquiring a knowledge of the rich flora of our Western Territories.

Cathestecum erectum, V. & H., recently described and figured in the *Torrey Bulletin*. *Manisurus granularis*, Sw., *Trachypogon Montufari*, Nees., *Andropogon hirtiflorus*, Kth., *Aristida Scheidiana*, Trin. & Rupr., *Aristida*—near *A. fasciculatis*, Torr., but not agreeing exactly with any of the forms previously collected, *Stipa fimbriata*, HBK. *Muehlenbergia Texana*, Thurb., *Muehlenbergia arenicola*, Buckl., which may be only a large form of *M. gracillima*, Torr., and, indeed, has been referred to that species, *Muehlenbergia monticola*, Buckl., *Muehlenbergia*

depauperata, n. sp.,* *Trisetum interruptum*, Buckl., (= (?) *T. elongatum*, HBK.) *Bouteloua prostrata*, Lag. (B. pusilla, Vasey), *Scleropogon Karwinskyanus*, Benth., *Melica Porteri*, Scribn. (M. mutica, var. parviflora, Porter).

New Species of Uredineæ.

BY T. J. BURRILL.

The plants described below are from large collections in Illinois of leaf-fungi, mostly made by A. B. Seymour for the Illinois State Laboratory of Natural History, Normal, Illinois. A paper upon the Uredineæ of Illinois, containing a fresh description of all the species so far observed in the State, is now ready for publication, and will be issued in a bulletin of the State Laboratory. Much care has been taken with the identification. While the writer holds himself responsible for the conclusions reached, he is glad to acknowledge the invaluable assistance of Mr. Seymour in the difficult sifting of names and types. Since the collections were made several species found to be new among them have been described by others.

UROMYCES ŒNOTHERÆ.

I. Infected leaves somewhat involute or revolute; peridia irregularly scattered over both surfaces of the leaf, minute, short, roundish or slightly elon-

* MUEHLENBERGIA DEPAUPERATA, n. sp.—Annual. Cæspitose. Culms erect, branched below, 1-4 inches high. Sheaths inflated, prominently striate, with membraneous margins. Ligule elongated, variously cleft. Leaves ½-1 inch long, minutely hairy or scabrous on both sides, finely striate, margins a white, cartilagenous, scabrous line, point rigid, involute. Inflorescence simple, racemose, spikelets appressed to the angular rhachis, sessile or raised on short, stout pedicels. Empty glumes minutely scabrous, especially towards the point, 1½-2 lin. long, the upper a little longer than the lower—the lower more or less cleft and terminating in two unequal points, the upper long-pointed, entire. Flowering glume, hardly as long as the empty ones, smooth or sparingly hairy below, terminating in an awn 1-3 lin. long.

Mr. Lemmon also collected this species in the Huachuca Mts.

In the allied *M. Schaffneri*, Fourn., the culms are usually taller, the empty glumes scarcely one-half the length of the flowering one, which is 2 lines long, and terminating in a very slender awn 6 to 7 lin. long.

EXPLANATION OF FIGURES.

Spikelet of *Muehlenbergia depauperata*. 1.
Floret of *Muehlenbergia depauperata*. 2.
Spikelet of *Muehlenbergia Schaffneri*. 3.
Empty glumes of same. All enlarged to the same scale. 4.

gated, with a whitish, spreading or recurved irregularly lacerated border; spores pale, globose-angular, 15 μ in diameter.

II. Spots red, purple, indefinite; sori epigenous, roundish, soon naked, brown; spores subglobose, minutely echinulate, brown, 15–18 by 16–24 μ.

III. Spots same; sori roundish or oblong, epigenous and soon naked, or cauline and long covered by the epidermis, blackish; spores oval, elliptical or oblong, strongly thickened at the apex, broadly rounded or variously pointed, dark brown, 16–18 by 24–30 μ; pedicels about one and a half times the length of the spore, often broad, tinted, especially close to the spore.

On *Œnothera linifolia*, Makanda, Ill., April 27, 1882. *A. B. Seymour.*

The æcidia occur on the cauline leaves, affecting all alike, but sparingly on the radical leaves; the uredo and telento forms are mostly confined to the radical leaves. The pedicels of the Uredospores are somewhat persistent.

Uromyces Scirpi.

II. and III. Amphigenous; spots brown, indeterminate; sori long covered by the epidermis, minute and rounded or larger oblong, sometimes confluent end to end, forming clusters up to one-fourth of an inch long, nearly black. II. Uredospores among the teleutospores, few, irregularly elliptical, yellowish brown, sparsely echinulate, 15–20 by 27–36 μ. III. Teleutospores clavate-elliptical, widest at the center, mostly pointed, brown, apex darker and thickened, about 18 by 32–42 μ; pedicels stout, subhyaline, about the length of the spore.

On *Scirpus fluviatilis*, Champaign, Ill., August 13, 1881. *A. B. Seymour.*

The leaves are thickly mottled with conspicuous brown spots, not definitely circumscribed. The appearance is nearest to that of *U. spartinæ*, Farl. of anything found, but is sufficiently distinct in the appearance of the sori and the larger, differently shaped spores.

Uromyces graminicola.

II. and III. Sori amphigenous, but more common on under surface, scattered, small, oblong or linear, soon uncovered, the ruptured epidermis ragged, but usually its remains plainly apparent; uredospores spheroidal or oval, minutely echinulate, 15–18 by 18–23 μ; teleutospores variable, subglobose, oval or oblong, smooth, apex rounded or angular, thickened, 12–18 by 21–30 μ; pedicel somewhat colored, thick, scarcely tapering below, once to twice the length of the spore.

On *Panicum virgatum*, McLean Co., July 20, 1881; *Elymus Virginicus*, Piatt Co., August 10, 1881. *A. B. Seymour.*

Puccinia tenuis.

I. Hypophyllous, rarely also epiphyllous; æcidia clustered in little irregular groups or sparsely scattered, very small, short, the narrow border irregularly lacerated and recurved; spores subglobose, very minutely tuberculate, 14–18 μ. (*Æcidium leave*, Schw.)

III. Hypophyllous; spots small, often confluent, mostly yellow, with a broad blackish center; sori sometimes scattered, usually confluent, effused, slightly convex, covered by the epidermis, dull grayish black; spores oblong-clavate, slightly constricted, usually angular or variously conspicuously pointed, 15 by 40 μ; pedicels hyaline or slightly colored, half as long as the spore.

On leaves of *Eupatorium ageratoides*, Bloomington, Ill., Sept. 3, 1879. *A. B. Seymour.*

PUCCINIA SEYMERIÆ.

III. Hypophyllous and on stems and calyces; spots definite, dark-colored; sori rather large, mostly crowded in conspicuous circular clusters a fifth of an inch in diameter, these sometimes confluent, dark brown; spores elliptical or oval, little constricted, obtusely rounded at the ends, smooth, wall firm, brown, 15–21 by 30–36 μ; pedicel hyaline, broad, persistent, twice as long as the spore.

On *Seymeria macrophylla*, Bloomington, Ill., Sept. 2, 1879. *A. B. Seymour.*

This is perhaps near *P. veronicæ* (Schum.) (*P. veronicarum* DC.), from which it differs in the size of the sori, the shape of the spores, and especially the stout, persistent pedicels. In the form of *P. veronicæ*, with persistent pedicels, the spores are oblong to spindle form, as well as furnished with a thickened apex.

MELAMPSORA CROTONIS, (Cooke).

II. and III. Amphigenous; uredosori scattered, rather prominent, circular, cinnamon colored; uredospores obovate, sharply echinulate, produced on pedicels, 15–21 by 18–27 μ; teleutosori irregular, scattered or somewhat confluent, slightly elevated, reddish-brown; teleutospores irregular, mostly elliptical or oblong, two or more celled, variously imbricated in an irregular layer, smooth, cell-contents granular, pale to dark brown, 11–15 by 30–42 μ.

Trichobasis crotonis, Cke. Grev. vi. p. 137.

On leaves of *Croton capitatum*, and *C. monanthogynu*, S. Ill., Oct., 1881; *Crotonopsis linearis*, La Salle Co., Sept., 1882. *A. B. Seymour.*

ÆCIDIUM DICENTRÆ.

Hypophyllous; æcidia uniformly and remotely scattered over the entire surface, rather large, prominent, border regularly segmented and quite uniformly and abruptly rolled, firm; spores subglobose or elliptical, epispore thin, minutely tuberculate, 10–13 by 11–16 μ; spermogonia large, disk-like, rather distant in a single row on the margin of the leaf, reddish-brown.

On *Dicentra cucullaria*, Central and Southern Illinois, April and May, 1882. *A. B. Seymour.*

ÆCIDIUM ONOBRYCHIDIS.

Hypophyllous; spots distinct or confluent, somewhat effused, yellowish-brown; æcidia subcircinate, crowded, short, border abruptly recurved, rather coarsely dissected; spores subglobose or elliptical, epispore rather thin, studded with low, obtuse tubercules sometimes united in ridges, 19–24 μ; spermogonia clustered in the center of spots mostly on the upper surface, minute, reddish-brown.

On *Psoralea Onobrychis*, La Salle Co., Ill., June 20, 1882. *A. B. Seymour.*

ÆCIDIUM DIODIÆ.

Hypophyllous, on the cotyledons and rarely lower leaves; spots distinct, small, greenish-brown; æcidia few, in little irregular clusters, small, short, border little or not at all recurved; spores subglobose or elliptical, epispore

rather thin, tuberculate, 17–21 by 21–30 μ; spermogonia rather numerous, scattered, above, not found on many of the spots.

On *Diodia teres*, Johnson Co., Ill., May, 1882. *A. B. Seymour.*

ÆCIDIUM MYOSOTIDIS.

Hypogenous; æcidia uniformly distributed over the leaf, mostly somewhat densely crowded, rather large, somewhat prominent, the recurved border wide and rather coarsely divided; spores subglobose or elliptical, epispore thick, conspicuously tuberculate, 15–18 by 18–22 μ; spermogonia numerous, uniformly scattered over both surfaces of the leaf, reddish-yellow.

On *Myosotis verna*, Cobden, Ill., April, 1882. *A. B. Seymour.*

The distribution of the æcidia is decidedly different from that of *Æ. asperifolii*, Pers., as described, as well as from the specimens at hand, and similarly different from those named *Æ. lycopsidis*, Desv., *Æ. lithospermi*, Thum., and *Æ. symphyti*, Thum. The three last are made synonyms of the first by Winter, and all are said to be the æcidia of *Puccinia rubigo-vere.*

The latter is common in Illinois in wide areas where Myosotis does not occur, and no other species of Borraginaceæ has been observed infested with *Æcidium.*

ÆCIDIUM PHYSALIDIS.

Hypogenous; æcidia uniformly, usually densely, distributed in patches over the leaf-surface, short, friable, soon becoming pulverulent; spores subglobose or elliptical, often angular, epispore rather thick, obscurely tuberculate, 13–15 by 15–21 μ; spermogonia very abundant, hypophyllous, scattered over extended patches with or without æcidia, comparatively large, honey yellow.

On *Physalis viscosa*, Urbana, Ill., May 30, 1879. *T. J. Burrill.* There is an *Æcidium solani*, Mont. (Flora Chile 8. 38), of which no further information can be had.

ÆCIDIUM CROTONOPSIDIS.

Hypogenous, occurring upon the cotyledons, and less commonly upon the caulicle and lower leaves; spots distinct, dark colored, the affected cotyledons soon yellow, æcidia not numerous, irregularly clustered, short cylindrical, becoming coarsely divided and widely spreading, pseudo-peridium thin but firm; spores irregular, mostly elliptical, epispore rather thick, tuberculate, 12–15 by 15–18 μ; spermogonia very few, scattered above.

On *Crotonopsis linearis*, Johnson Co., Ill., May, 1882. *A. B. Seymour.*

ÆCIDIUM TRILLII.

Hypophyllous; spots distinct or somewhat confluent, circular effused, yellowish; æcidia densely aggregated around a free central circular space, sometimes with a more or less distinct outer circle later in development, short, pseudoperidium thin, fragile, soon after opening becoming pulverulent; spores subglobose, epispore very thin, smooth, 19–24 μ; spermogonia very numerous, rather prominent, scattered, central, on both sides of leaf.

On *Trillium recurvatum*, Pine Hills, Union Co., Ill., April 24, 1882. *A. B. Seymour.*

Differs from *Æ. convallariæ* in the more fragile and fugacious æcidia, and in the smooth, very much thinner epispore.

ADDITIONAL SPECIES BY A. B. SEYMOUR.

PUCCINIA RANUNCULI.

III. Amphigenous but mostly epiphyllous; sori irregularly associated, often crowded but scarcely confluent, occupying large areas or the whole leaf surface, little elevated, circular, powdery, surrounded by the upturned edges of the epidermis, æcidium-like, cinnamon brown; teleutospores broadly elliptical, usually little or not at all constricted at the septum, ends rounded, vortex more rarely furnished with a low pale apiculus, thickly but minutely tuberculate, 18–23 by 22–39 μ; pedicel hyaline, fragile, sh rt, sometimes more or less lateral.

On *Ranunculus repens*, Riverside, Ill., near Chicago, June 2, 1883. *J. C. Arthur.*

The little warts of the epispore are scarcely visible in soaked specimens. The teleutospores sometimes germinate in the sorus in June. One-celled specimens are not uncommon, and some vary widely from the described type.

PUCCINIA CONOCLINII.

II. and III. Mostly hypophyllous; spots small, purple, often confluent over large areas, becoming pale; sori scattered, sparse or very numerously associated, not often confluent, uredosori cinnamon-brown, teleutosori dark reddish-brown; uredospores subglobose to oval, sharply echinulate, 18–25 μ; teleutospores broadly oval, little constricted, ends rounded, wall thick, warty, 27 by 32–42 μ; pedicel nearly hyaline, firm, crooked, very long, about three times the length of the spore.

On leaves of *Conoclinium cælestinum*, Pine Hills, Union Co., Ill., Sept. 11, 1882. *F. S. Earle.*

This is *P. centaureæ*, DC. of Berkeley's Notices of North American Fungi, Grev. III., p. 53, as ascertained by examination of the original specimen in Herb. Curtis, but differs from authentic specimens bearing this name in various exsiccati.

ÆCIDIUM CEPHALANTHI.

Hypogenous; spots distinct, brown, scarcely thickened; æcidia numerous, irregularly crowded, short, the strongly recurved narrow border abrupt, finely divided; spores large, subglobose or elliptical, epispore very thick, very conspicuously reticulately roughened, 28–36 by 33–43 μ; spermogonia scattered over the upper side of the infected area, minute, reddish-brown.

On *Cephalanthus occidentalis*, Ravenswood, near Chicago, June, 1883, *J. C. Arthur*; Quincy, Ill., July, 1883, *C. A. Hart*

To the above the following may be appended:

UREDO HYDRANGEÆ, B and C. Hypogenous; spots small, yellowish, more or less confluent, sori minute, scattered, few; spores obovate, produced on pedicels, minutely tuberculate, 12–18 by 16–24 μ.

On *Hydrangea arborescens*. This name is attached to specimens in the Curtis Herbarium, and published in Curtis's Cat. Plts. N. Car., p. 122, without description. The specimens from which the description is taken were collected by Mr. F. L. Earle, Cobden, Oct. 13, 1879, and determined by comparison with the original.

GENERAL NOTES.

A New Silphium from Tennessee.—SILPHIUM BRACHIATUM. n. sp.—Stem 3 to 5 feet high, square, smooth and glaucous: leaves all opposite; lower short petioled, gradually attenuate from a dilated, truncate or subhastate base, slightly decurrent on the short ciliate petiole, roughened on the upper side, smooth on the lower, except the principal veins, which are slightly hirsute, irregularly and repandly dentate, 4 to 6 inches long, thin and glaucous green; uppermost sessile, ovate-lanceolate, ciliate on the margin: heads solitary on slender peduncles: involucre of about 15 or 16 foliaceous subsquarrose ovate scales: rays about eight, ¾ inch long: receptacle 1 inch high: akenes nearly orbicular, narrowly winged and slightly notched at the apex.

Collected July 14th, 1867, on the western slope of the Cumberland Mountains, one mile from the railroad tunnel at Cowan, Tennessee.

The species is very distinct and apparently plentiful in the locality, but has never been observed by me in any other part of the State. The only specimens now in collections are in the herbaria of Prof. J. W. Chickering and Prof. Lester F. Ward, of Washington, and Mr. Wm. M. Canby, at Wilmington, to which gentlemen I gave specimens at the meeting of the A. A. A. S. at Nashville in 1877, under the spurious name *S. perfoliatum*, var. One specimen I have recently sent to Dr. Gray, not finding it described in his recent volume on the Compositæ, and he expressed his regret that I had not sooner called his attention to the existence of this species.—A. GATTINGER, M. D., *Nashville, Tenn.*

Cynoglossum grande, Dougl.—This species has a long-peduncled inflorescence, terminating a leafy stem. The bracts of the panicle are seemingly all wanting; but they are really present in the shape of large leaves. By the coalescence of the branches to the stem and to each other, the false racemes are carried far away from the leaves to which they belong. That this is the case is seen best early in spring, when the leaves and flower-buds are closely together. At that time the lower leaves have buds or undeveloped branches in their axils, while four to six of the upper ones are perfectly empty. Directly above each empty axil, and not far away from it, there is a cluster of flower-buds; the lowest above the first empty leaf, the next cluster above the second of these leaves, and so on to the last leaf or bract. The first of the false racemes is often few-flowered or rudimentary, and then it remains low down on the peduncle, or among the leaves, sometimes nearly in the axil of its leaf. Two, or occasionally more, of the upper racemes are without bracts.—W. N. SUKSDORF, *White Salmon, Wash. Ter.*

Campanula and Specularia.—Referring to p. 149 and p. 176 of the GAZETTE, we offer a brief rejoinder to Mr. James's reply to a curt criticism, in which we deprecated the making of a needless synonym upon a misunderstanding of the facts. Mr. James called our *Campanula Americana* by the name of *Specularia Americana*, on the ground of its having "rotate, erect and sessile flowers," "while all the genuine Campanulas have bell-shaped, drooping and pe i-

celled flowers." Upon which we remarked, in passsing ,that it would seem from this that the original Canterbury Bell is no longer a *Campanula*. Mr. James is unable to understand this, and the reader of his reply may say the same if he fails to notice that in repeating the criticised statement above quoted he has left out the word "drooping." Our point was that the flowers of *Campanula Medium* are erect in anthesis, and in that respect out of his character for *Campanula*. But, as we said before, a large number of Campanulas have erect flowers, some of which, as in *C. Medium*, are inclined or recurved on their peduncle or pedicel after anthesis, and some not. As "Wood's Botanist and Florist ..... distinctly states that in Canterbury Bells the flowers are bell-shaped, it would therefore come under *Campanula* as I have stated it"—i. e. under the altered statement. So it would if it had the rotate corolla of *C. planiflora* or the subrotate corolla of some other species, or the quite erect peduncle or the sessile flowers of certain others.

But the gist of our criticism was that the flowers are not erect in *C. Americana*. Mr. James replies that in his experience "they are erect, at least in opsition to drooping." Next summer, when he looks up the plant in blossom, he will probably find that, while the capsule is erect, the flowers in anthesis are so placed that the flat face of the corolla is parallel with the vertical axis of inflorescence.

"Lastly, if there are plenty of species of Campanula with sessile and rotate flowers, there is all the more reason for the union of the two genera into one," Mr. James thinks. A third course might be taken, namely, to let them alone upon the characters which botanists have recognized.

Maine Notes.—A forty-mile stage ride through the more thinly settled portion of northwestern Maine, during the past summer, exhibited one botanical phenomenon of great interest and beauty.

As we were riding along the banks of the Canabassett river, a noisy, little tributary of the Kennebec, our driver hearing us speak of different flowers, said, "Just wait, and in a few miles I will show you the biggest flower garden that ever you saw."

Before long we came to a tract of some 4,000 acres, over which lumbering operations had been carried on some years ago, leaving a tangled mass of limbs and underbrush.

On June 8th, of the present year, a fire broke out and swept over this entire tract, lasting for two weeks, and burning with such fury that it was almost impossible for the stage to travel along the road.

The driver said that the new vegetation began to start in three weeks after the fire, and as we drove along, August 14th, our road passing through this tract for four miles, the whole region as far as the eye could reach, over hill and valley, ridge and interval was one mass of color from the "fireweed," *Epilobium angustifolium*. It looked, as one of the party said, as if the earth were covered four or five feet deep with a fall of pink snow. The sight was one never to be forgotten.

Now comes the query, "Where did the plants come from?" The region

had been thoroughly burned over two months before, so that but little other vegetation had survived; the seeds are very light and feathery, and the driver had noticed none in the previous years.

Several albino clumps were noticed, where a dozen stalks would have a pure white inflorescence, but with no other peculiarity to be detected.

When at Linn Pond, twenty miles farther in the woods, were seen a number of spruces, *Abies nigra*, from which, at twenty feet or more from the ground, one branch had gotten the better of all the others, and making a symmetrical curve upwards, with a diameter of several inches, was running up parallel with the main stem, although the terminal bud did not seem to have been injured.

J. W. CHICKERING, JR., *Washington, D. C.*

Wild Fruits in Boston Markets.—The fruit of *Prunus serotina* is sold in the Boston markets to a considerable extent in seasons when it is plenty. Germans and Italians make excursions from the city, and pick the fruit from trees in copses and pastures. Wild cherries were not abundant this year, and the amount sold probably fell considerably short of one hundred bushels. They sold for $3.00 per bushel. The cherries are used for flavoring rum and brandy, being added to the liquor whole.

The grapes of *Vitis Labrusca* are largely used for jellies. This year they were scarce, and they sold for two and three cents per pound. At one time they brought more in the market than Concords. Probably about two hundred bushels were handled this year.

The sweet little berries of *Physalis pubescens*, L., with their calyxes intact, are selling at present (Oct. 22), for $1.00 per peck. They are known in market as "strawberry tomatoes." They are grown in small gardens in this vicinity. The berries are made into preserves. "Strawberry tomato" is a name which properly belongs to the ornamental *Physalis Alkekengi*. I believe, as a boy, I knew the Physalis fruit as "ground cherry."

The fruit of *Berberis vulgaris* is one of the commonest of small fruits in Faneuil Hall market. On nearly all the hills of Eastern Massachusetts the barberry has run wild, and the berries are in most places harvested regularly. The pretty berries make attractive garnishes, and they are highly prized for pickles. They bring about fifteen cents per quart.—L. H. BAILEY, Jr.

Oospores of Cystopus in Capsella.—Mr. Horace Stafford first, and afterward several other members of the same class in Purdue University, while studying *Cystopus candidus* lately, found abundant oogonia and antheridia in the upper parts of the stem and floral organs of *Capsella*. The oogonia were in all stages of development, many of them containing mature oospores. Dr. Farlow says (BOT. GAZ., VIII., 335): "I have not seen oospores in these plants [*Capsella* and *Lepidium*] in this country," and I am not aware that any one else has seen them before.—C. R. B.

The same results were obtained at nearly the same time in the botanical laboratory of Wabash College.—J. M. C.

Carya myristicæ formis, Nutt., occurs in the Red River Valley as far as the Arkansas boundary, and probably considerably farther up the river. North of the Red river it extends into the foot hills of the Palæozoic region, and is found in abundance on eminences four or five hundred feet above the valleys. It is known among the people of that region as *Bladed Pecan.* The nuts in drying split open at one end (usually), and are easily opened by means of the blade of a pocket knife placed in the cleft. The kernel, though small, is of excellent flavor.

Manual of the Mosses of N. Am.[1]—In the Sept. number of the BOTANICAL GAZETTE, Mr. Eug. A. Rau has published for species of mosses an enumeration of localities which have not been mentioned in the Manual of the Mosses of North America. A detailed enumeration of the localities cited by collectors would have greatly increased the bulk of the book, without adequate advantage for the student. The same may be said of the numerous varieties which have forcibly been omitted.

The same bryologist adds a list of species which, he says, are omitted from the work, although of sufficient importance. The list is as follows: *Hypnum thelistegum,* C. M., Florida. Aust. Musci. App. Suppl. N. 505, *H. homalostegium* C. M., Alabama, Mohr. *H. occidentale,* S. & L., Oregon, Hall., *Trichostomum macrostegium,* Sull., Alabama, Mohr, *Dicranum Richardsoni,* Hook. Greenland, *Dicranella Canadensis,* Mitt. British America, Macoun., *Dicranum arcticum,* Schp, Greenland, Labrador, *Tetraplodon mnioides* vars. *Adamsianus* and *curifolius,* Arctic regions. Of the above species *Hypnum homalostegium* and *Trichostomum macrostegium* have not been found within the limits of North America. According to Dr. Mohr's information the specimens communicated formerly as found in Alabama are Mexican specimens collected by himself in Mexico, and casually mixed with those found around Mobile. *Dicranum Richardsoni,* iHook, is a synonym of *Cynodontium virens,* Schp. *Dicranella Canadensis,* meaning *Cynodontium Canadense,* Mitt. is *Dichodontium Canadense,* of the Manual. *Tetraplodon mnioides* var. *curifolius* is of no account as a variety. It is included in the cited synonym *Splachnum urceolatum. Dicranum arcticum,* considered by Bruch and Wilson as a variety of *D. Starkii,* might have been mentioned though not described in the first edition of the Synopsis of Schimper, and *Hypnum thelistegum,* C. M. (not *thelistegium*) is of Austro American type, and no specimen of it could be obtained. Its determination is still to be ascertained. I owe to Mr. J. Donnell Smith, to whom the discovery of the moss is credited, a set of his specimens found in Florida; but the species is not represented in the lot. The only species, therefore, really forgotten in the manual, and that by an unaccountable oversight, is *Hypnum occidentale,* Sull. & Lesq. and this, under about nine hundred species described, do not indicate carelessness in the preparation of the work, the species being one originally determined by myself.—LEO LESQUEREUX, *Columbus, O., Oct. 7th, 1884.*

[1]This note was crowded out of the last No., for which it was prepared.

Dioclea Boykinii, Gray, was found in full bloom two years ago, in Drew county, Arkansas, the last of July. The legumes were quite immature, and we concluded this was its usual time of flowering. From observations the last season we conclude that it sometimes begins flowering as early as the middle of June. We would say from June to August is the period of this species. We were unable to visit the Drew county locality this season, but the plant was found in abundance as far north in Arkansas as the line of the Memphis & Little Rock R. R., on the border of Grand Prairie near Devall's Bluff. The flowers had nearly all fallen by the middle of July (only a few at the ends of the racemes being left), and many of the pods mature. The plant often climbs twenty feet high, and the leaves sometimes are eight inches in diameter, and broader than long. The racemes are occasionally seven feet long, and bear numerous blossoms, but few of which produce legumes.

Entirely sterile racemes are abundant, and but few pods are developed on the fertile ones. We did not notice a single raceme where all the flowers were fertile. The pods usually contain but few peas, which are separated from each other by a membranous partition, and are about two-thirds as long as field peas. The taste is somewhat like that of a garden pea. Occasionally pods contain as many as six peas, and are three inches long, and five-eighths broad.

Cows are exceedingly fond of the foliage and pods, and the vines are stripped wherever in reach, requiring the botanist to pull his specimens from the tree tops in exposed places. The pods when they drop are devoured greedily by swine. This species was seen about Little Rock, north of the Arkansas river, and probably occurs throughout the east and south part of the State.

F. L. Harvey, Fayetteville, Ark.

EDITORIAL NOTES.

Foote's Leisure Hour for October opens with a poetical extract dedicated to the Botanical Club.

Dr. E. P. N. Fournier, best known for his work on the Mexican flora, died in Paris lately, at the age of fifty.

Dr. W. G. Farlow has been granted a year's vacation, and will soon go to the Southwest to recuperate his health.

Bulletin No. 4, of the same Division, is devoted to a continuation of an investigation of the composition of American wheat and corn.

Science Record has suspended publication with the completion of its second volume. It was an excellent journal, and we regret its loss.

The title of Dr. Sturtevant's paper before the American Association was the "Influence of Insolation upon Vegetation," and not *insulation*, as given in our last issue. It dealt with the relation of certain solar influences to rapidity of growth.

DR. CHRISTIAN LUERSSEN has been called to the professorship of botany at the Forstakademie in Eberswald, to succeed Prof. DR. BREFELD, who goes to Münster.

PROF. DR. ENGLER, of Kiel, has been appointed professor of botany and director of the botanic garden at Breslau, as successor of Dr. GÖPPERT, recently deceased.

DR. C. E. BESSEY has accepted the position of professor of botany in the University of Nebraska, situated at Lincoln, Neb., and has already entered upon his duties.

"THE BOTANICAL CLUB was a noticeable feature of the American Association, and the perfection and compactness of its organization called forth much favorable comment," says the *American Naturalist*.

DR. CHARLES TULASNE, of Paris, died on August 21, in the 68th year of his age. He illustrated many of the botanical works of L. R. Tulasne, chief among them being the sumptuous work on fungi, *Selecta fungorum carpologia*.

INDIA INK, owing to the readiness with which it stays in suspension and the absence of all deleterious qualities, is specially adapted to use in studying the movements of the lower thallophytes. Attention has recently been called to it by M. Léo Ewera.

MR. C. B. PLOWRIGHT has published a list of the fungi of Norfolk, England, which reaches over 1,500 species, a very large number for one county. 636 of these are *Hymenomycetes*, 376 *Pyrenomycetes*, and 85 *Uredineæ*. Specific names are used without capitals.

BULLETIN NO. 3, of the Chemical Division of the department of Agriculture on the "Northern Sugar Industry," contains three very poor figures, which, it is alleged, show the cell-structure of the stalk, leaf and seed of the sorghum plant. The figures are better for what they are than for what they claim to be.

PROFESSOR W. TRELEASE has given a statement in *Psyche*, for September, of the present knowledge regarding the black spots on the leaves of solidagos and asters, usually considered by botanists to be some species of *Rhytisma*, and by entomologists to be galls of some cecidomyid larva, generally *Cecidomyia carbonifera* O. S., and has come to the conclusion that they are due to the joint influence of the fungus and insect.

THE AMERICAN MICROSCOPE is not an instrument for research, that is, not for convenient every-day use. The American manufacturers make instruments for the so-called microscopists, those who are willing to pay a fancy price for a fancy article. One of the prominent makers of the country told the writer, not long since, that he was working to establish a reputation, and could not afford to produce the "cheap" instruments desired by some workers. Until the makers assume a different attitude the showing made in the last *Science Record*, which gives a list of thirty-one prominent investigators, twenty-three of whom use foreign microscopes, mostly Zeiss and Hartnack, is not likely to be materially changed.

THE FACILITIES FOR BOTANICAL INSTRUCTION at Harvard have recently been increased by the appropriation of the first floor of Harvard Hall together with rooms for constant temperature and studies in light to the use of the department of vegetable physiology and histology. The former rooms at the Botanic Garden are reserved for the economic and systematic work which comes in the spring term. The cryptogamic department has excellent quarters at the Museum of Comparative Anatomy.

PROF. M. STALKER, state veterinarian of Iowa, and professor in the Iowa Agricultural College, has been studying a new disease among horses of the Missouri valley. In mild cases of the disease the animals lose vigor, and after some weeks die, but in more violent cases they become wild and unmanageable or pass into a stupor and live but a short time. The cause was traced to the eating of *Crotalaria sagittalis*, L., a not distant relative of the famous "loco weed," *Astragalus mollissimus*, Torr. The disease is named crotalism.

THE CONTROVERSY on the relation of cluster-cups or æcidia to rusts, especially those on grasses, which has been caried on with much fervor in England between Mr. W. G. Smith and Dr. M. C. Cooke on the one hand, and Mr. Plowright and others on the other hand, has little concern for botanists on this side of the waters. No botanist of note in this country advocates the autonomy of *Æcidium* and *Roestelia*, although most of them believe it best to keep them separate in our catalogues until their exact relationships have been determined by cultures. Dr. Farlow is cited on both sides of the question, but no one who knows how thoroughly progressive although cautious he is, could for a moment believe he would endorse the wild or antiquated opinions of Mr. Smith. Mr. Smith's views are stated at length in his work on the diseases of crops, and have been answered by Mr. Plowright in the British Journal *Agriculture* for September 10.

IT IS HARDLY NECESSARY to make any announcement concerning the GAZETTE for 1885. It is sufficient to say that it will be continued under the same management, and upon the same plan as during the past year. Some new features will be added, but they will recommend themselves as they appear. During the coming year the GAZETTE will finish its first decade, and its steady growth in the favor of botanists is taken as a sufficient indication that it was a necessity. Even more attention will hereafter be given to editorial notes and book reviews, that subscribers may be kept well informed of the world's work in botany. At the same time, the editors will constantly exercise the right of criticism, as they are not willing to take the responsibility of even indirectly recommending worthless books. The rapidly developing departments of physiological and cryptogamic botany will receive their full share of attention, while systematic work in the higher groups will probably yet hold the attention of the greater number of our readers. We would ask that our subscribers act as our agents, not that money may be made, but that the GAZETTE may make still farther advances in usefulness.

CURRENT LITERATURE.

Orchids of New England: a popular Monograph. By Henry Baldwin. 8 vo. pp. 159, figs. 40. New York. John Wiley & Sons, 1884.

Mr. Baldwin tells us in his preface that he had for some years "a bowing acquaintance" with the Orchidaceæ of his neighborhood, but was brought to closer observation of them by making sketches of the various species. His acquaintance now has certainly become more than a bowing one, and he details in this book many choice bits of information which only a close observer would have gathered. The various species are figured and discussed in the order in which they come into flower. In a pleasant way he chats about the habits and habitats of one and another, quoting freely from several previous writers on Orchids both popular and scientific, as to the structure, homology and physiology of the floral and other organs. It would have been better had Mr. Baldwin given more of his own observations and experiments as to these points. It would not have made the book less popular, and would have rendered it still more interesting to the botanists who are above (?) reading a popular book. New England certainly contains more species of Orchidaceæ than any equal area in the United States, forty seven being enumerated in the table of geographical distribution at the close of the book. In addition to this table a full though not complete bibliography and good indexes make the book very useful to botanists—more especially New England botanists. The figures, photo engravings of the author's drawings, are all good, and many of them excellent.

Descriptive Catalog of the North American Hepaticæ North of Mexico. By Lucien M. Underwood, Ph. D. pp. 133. Bulletin of the Illinois State Laboratory of Natural History.

To those who are acquainted with Dr. Underwood's previous volume, "Our Native Ferns and their Allies," which has brought the author much deserved credit for its careful and able preparation, it will be no surprise to find the present work equally well done. Dr. Underwood has, in this pamphlet, made a very praiseworthy and successful effort to set in order the species of Hepaticæ heretofore published from the region named. He has made no attempt to describe new species, "believing that too many have already been described from insufficient data." How many difficulties he met in getting out descriptions of the already published species, no one knows so fully as Dr. Underwood, because no one else has undertaken the task. We get a mere hint of them in the prefatory note. Neglect by collectors, rarity and inaccessibility of the literature, absence of American species from American collections, and inherent complexity, are enough to have deterred a less energetic worker than Dr. Underwood. Let botanists show their appreciation of his labor by communicating to him specimens of all forms found in their localities. In addition to the descriptions of species and genera, there is a brief account of structure, habits, geographical distribution, remarks on collecting and a complete bibliography of systematic works. Finally, let botanists rejoice that there is *one* State, at least, enlightened enough to support a State Laboratory of Natural History.

Vergleichende Morphologie und Biologie der Pilze, Mycetozoen und Bacterien. Von A. de Bary. Wilhelm Engelmann. Leipzig, 1884. 8vo. 558 pp. 196 Illust.

The original work, written in 1865, was entitled "Morphologie und physiologie der pilze, flechten und myxomyceten," and contained but 316 pages. The remarkable progress since made in the study of these plants is indicated in the change of title, in which the lichens are absorbed in the fungi, and the new class of bacteria added, but yet more by the table of contents, showing a won-

derful revolution and expansion in all that pertains to sexuality and classification.

The comprehensive statement of a subject by a master is invaluable to those who have passed the threshold of the study; and such we have in the work before us. It is a concise presentation of the principal facts, and a clear and critical discussion of their bearing. Such topics as the first recognition of form-species and genera in 1851, the homology and relationship of the fungi with algæ, mosses, ferns and flowering plants, interrupted homologies, the doctrine of apogamy, the meaning of pleomorphism, the discussion of proper terminology, copulation in the *Ustilagineæ*, the relation of the parasite to the host, form-genera in bacteria, and pathological bacteria, are replete with interest and instruction; limited space does not permit the mention of a longer list.

The author has placed all the best known groups in an ascending Ascomycetous series, beginning with *Peronosporeæ* and passing through the *Saprolegniaceæ*, *Mucorini*, *Entomophthoreæ* and *Ascomycetes* to the *Uredineæ*. The imperfectly known *Chytridineæ*, *Ustilagineæ*, *Saccharomycetes* and *Basidiomycetes* are treated as out-lying groups related to the higher forms.

The work is so fundamental and authoritative that no investigator can afford to remain ignorant of its contents.

Das Botanische Practicum. Von Dr. Edward Strasburger. Gustav Fisher. Jena, 1884. 8vo. 664 pp. 182 Illust.

Some idea of the importance of this work has already been presented in the August number of the GAZETTE. It aims to give a very full course in the essential features of the minute and gross anatomy of plants, adapted to both the beginner and the advanced student. The work is divided into thirty-four tasks, most of them too long for a single sitting, as laboratory work is conducted in this country. The first chapter treats of the parts of the microscope, the preparation of an object, and the study of various kinds of starch grains, introducing such simple reagents as iodine, potash and sulphuric acid, and the use of the polarizer. The second chapter takes up the study of the grains of peas and corn, illustrating the methods of making and mounting temporary and permanent sections, both free hand and with apparatus. The seeds of several other plants are then studied. The third chapter deals with protoplasm and its movements as seen in *Vaucheria*, the hairs of *Tradescantia*, *Cucurbita*, *Lamium*, etc., and in the cells of *Vallisneria* and *Nitella*, with the action of reagents, and method of using the camera lucida. The fourth chapter treats of chlorophyll grains, color bodies and leucoplasts in a variety of plants, and so on. It is impossible to more than barely indicate the completeness and suggestiveness of the work, the table of contents alone covering twenty-three pages. The student is led by easy stages to an understanding of the methods of investigation, and a knowledge of the mysteries of structure that have justly placed German botany so far in advance of the rest of the world. No topic of importance is left untouched, and abundant references indicate the source of additional information. Until translated it can not be used very much, of course, as a handbook, but is admirably adapted to individual study wherever the language is not too great an impediment, for which the remarkably copious index, such a rarity in German works, is of much assistance.

Diseases of Field and Garden Crops, chiefly such as are caused by fungi. By Worthington G. Smith, F. L. S. Macmillan & Co. London, 1884. 12mo. 353 pp. 143 Illust.

This work is timely, and deserving of attention. We have had numerous works of all grades on the cultivator's insect foes, but this is the first book in our language on fungous foes. The damage which fungi do annually to cultivated crops is something enormous, and far beyond the popular apprehension. This comes from the fact that the true nature of the diseases which owe their

origin to this cause is not usually well understood, or it may be not suspected; and the fungi themselves are minute and obscure, are insidious in their attacks, and difficult of control. Although the annual loss to the country from the depredations of fungi is undoubtedly as great as that from insects, we yet have no government or state reports on the subject, and but limited investigations. It is therefore very apparent that if Mr. Smith's work is accurate and readable, it meets a genuine need; and such, we hasten to assure the reader, is in the main the case.

The topics treated are the diseases of potatoes and onions, rust and smut of grain, mildew and other diseases of grass, ergot, club-root in turnips and cabbage, mildew of peas, lettuce and turnips, and various less known diseases. A few, like the clover sickness, clover dodder and ear-cockle (the last two, by the way, not of fungous nature), and some others, are unknown or not troublesome in America, but for the most part the book is as applicable here as in England. The few remedies only which are suggested show how little has yet been done in this line.

The illustrations are clear and suggestive, although we must demur to giving the impression that such highly diagrammatic drawings are produced by the camera lucida.

The author has a good deal of that quality known in America as Johnny Bull, and it has led him into giving undue prominence to a topic on which he holds antiquated notions, and which he tries to pass current by propping up with bad philosophy. We refer to the forty pages on the connection of corn mildew and barberry blight, which had better been left unsaid. We speak of the subject elsewhere in this journal. The chapter on the passive state of the potato disease also needs critical sifting.

The Agricultural Grasses of the United States. By Dr. George Vasey. Also, *The Chemical Composition of American Grasses.* By Clifford Richardson. Department of Agriculture, 1884.

Dr. Vasey has done a good thing for agriculturists in publishing this bulky pamphlet. There are nearly 150 pages of text, and 120 plates intended to represent all of our agricultural grasses. It does seem as though even the most obtuse observer could get from this pamphlet at least a general notion of the ordinary grasses about him. The plates will help him more than the text, for that, simplified as it has been, is unavoidably technical, although a good glossary may enable some to spell their way through. Some special reports from Montana, and the Rocky Mountain region; also in a more condensed way from other sections of our country, give additional interest. Mr. Richardson's work is given in a tabulated form, and has a very direct bearing upon the successful cultivation of grasses. There can be no doubt that by such means our farmers will be led into some scientific knowledge of the plants they chiefly cultivate, a knowledge which must have its influence in improved methods, and may act somewhat as a safeguard against much of the unutterable "scientific" bosh published by certain agricultural papers.

American Medicinal Plants: An illustrated and descriptive guide, etc. By Charles F. Millspaugh, M. D. Boericke & Tafel, New York; Philadelphia. Nos. 1 to 5.

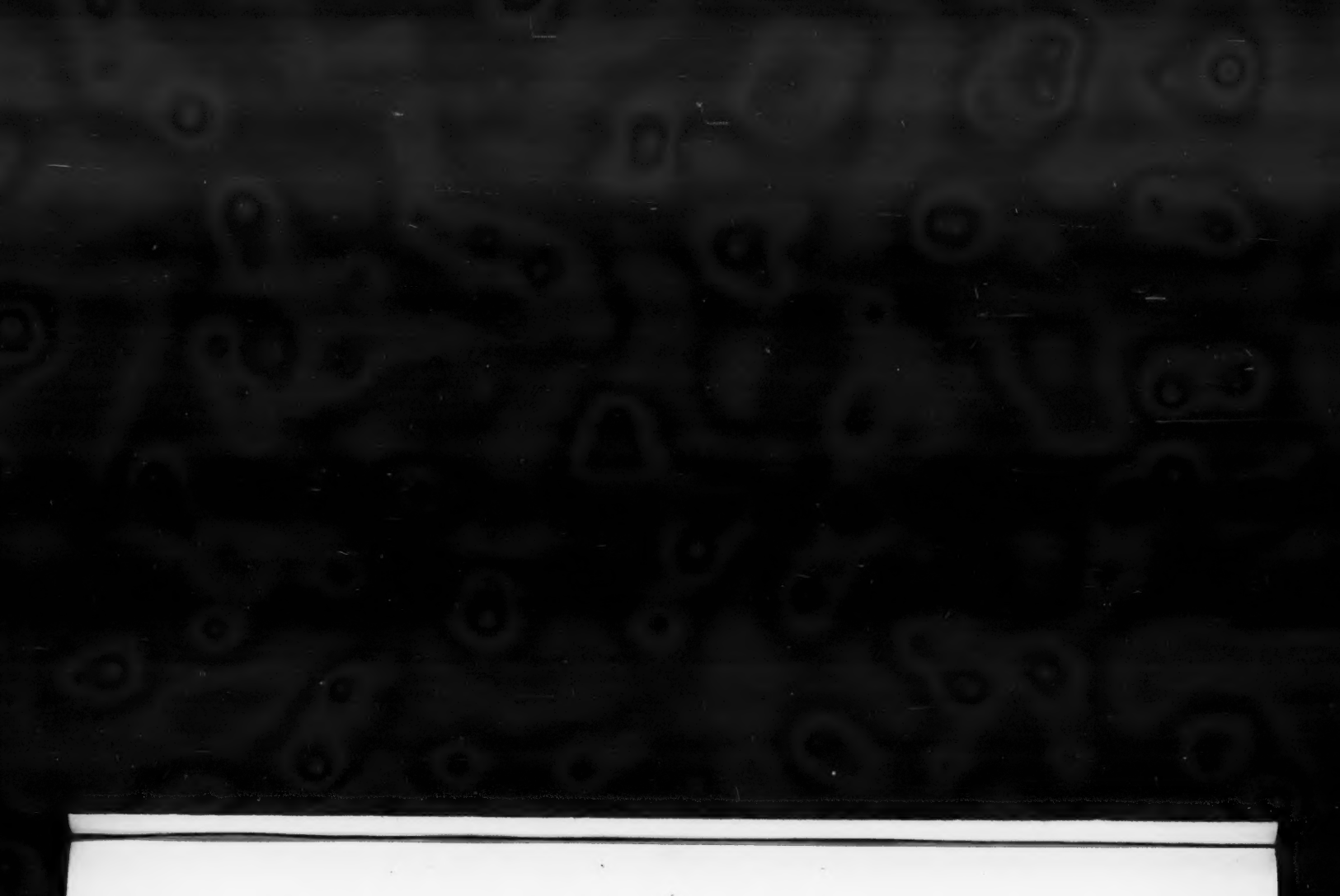
This is a very elaborate work, being issued in loose sheets with colored plates, and is meant to represent the American plants used as homœopathic remedies. The plants are all drawn by the author *in situ*, and are mostly very well done. Each number contains six species and plates, and one hundred and eighty are promised. The principal object seems to be to enable practitioners not only to collect fresh material within their reach, but also to understand its

preparation and application, a desire which is very well met in these handsomely printed sheets.

Characteristics of the N. Am. Flora: An address to the Botanists of the B. A. A. S., at Montreal; read August 29. From the *Am. Jour. of Sci.* 38. 323–340.

Dr. Gray's masterly address at Montreal has probably been read by all botanists, at least it ought to be, and no notice here can make good any such failure. A subject of greatest interest to us all, treated by one of all the most competent, is a combination that no American botanist can afford to neglect. Bristling as it does with interesting facts, nothing but a reprint could do it justice.

The N. Am. Geasters: By A. P. Morgan. From the *Am. Nat.* 18. 963–970.

This paper is illustrated and well describes the beautiful "Earth-Star Puff Balls." Sixteen species are described, twelve of them being figured.

Catalogue of the Flora of Minnesota, by Warren Upham, and *Preliminary List of the Parasitic Fungi of Wisconsin*, by William Trelease, come too late for review in this number, but will be more worthily noticed in the next.